

able. Attention has long been directed to the association of enlarged turbinates with the concavity of deviated septums, but sufficient emphasis has not been made upon the correction of this enlargement at the time the resection is done.

With a septum deviated to the left, the breathing space is narrowed on the left and, conversely, is widened on the right. The right inferior turbinate will therefore enlarge, since it seems to be a corollary for the turbinate to enlarge in a compensatory manner and thus narrow down an excessively wide space within the nasal chamber in order to contact a maximum of air that may pass through it.

If the condition has been of short duration, this turbinal enlargement can be classified as an engorgement and, after the septum resection has been performed, will eventually spontaneously shrink down more or less to somewhere within its former size. However, if the enlargement has been long standing, there evolves a tendency toward chronicity and this condition can be classified as hypertrophy or hyperplasia.

Recapitulating the points brought out so far: If the septum is deviated to the left, causing an unusually large breathing space on the right, the right inferior turbinate will enlarge in a compensatory manner to fill the concavity on its side caused by the deviation. However, after the operation this concavity is destroyed, since the septal mucosa now hangs down as a straight partition. Inasmuch as the turbinate is hypertrophied, there is no spontaneous return to former size, and the hitherto good side of the nose is now the one of which the patient complains.

It would appear that differentiation between engorgement and hyperplasia, prior to the septum operation, would clarify the situation and point toward the proper method of procedure. The standard technique is well known—that of applying a weak solution of cocaine to the turbinate under consideration. Shrinkage of the tissue within five minutes would designate the enlargement as a temporary engorgement. However, if the turbinate shows no, or only only a small, change in size within that period of time, we know we are dealing with a true hyperplasia, and attention toward this condition is indicated before the patient is discharged.

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## HISTAMIN AND EPINEPHRIN TESTS

### EPINEPHRIN:

The minute vessels which color the skin contract in the presence of adrenalin, producing an area of pallor. If the venous return from a limb be obstructed by a sphygmomanometer cuff, the pressure in the veins and, therefore, in the venous end of the vessels which color the skin, will build up to the pressure in the cuff. In this way it is possible to measure the contractile power of the minute vessels. In general, this is of the same order as the resting-blood pressure, but is found

to be lower in areas that have recently been exposed to injury, irritants, or burning by heat or light and in those areas such as the face which habitually suffer the minor insults consequent upon the exposure.

### HISTAMIN:

Eppinger, and later Lewis, described the triple response of the skin vessels to the intradermal exhibition of histamin. The full development of this response takes from three to eight minutes.

1. *Local Reddening*.—The whole area with which the histamin comes in contact by diffusion presents a reddening due to a relaxation of the minute vessels of the skin. This reaction is commonly masked by 3.

2. *Red Flare*.—This is a widespread (1 to 2 centimeters) area of bright reddening produced by arterial dilatation as the result of an axon reflex excited by the histamin. This flare is unaffected by nerve section until enough days have passed for nerve degeneration to take place.

3. *Wheal*.—A strictly localized wheal is present, associated with a change in the rate at which tissue fluid is exuded from the blood stream.

(4. *Itching*.—As the wheal starts to form, an itching sensation is felt.)

The same factors which lower the contractile power of the coloring vessels in the epinephrin test appear to inhibit the triple response to histamin; but whereas the adrenalin response is dependent solely upon the condition of the minute vessels, the histamin responses—at least the flare and the wheal—are dependent upon the blood supply, the integrity of the local nervous vasodilator system and the relaxing power of the local arterioles.

These reactions have been used to aid the prognosis of diabetic circulatory insufficiencies, in the selection of amputation sites (McNealy and Shapiro) and in the differentiation between occlusive and spastic types of arterial disease (Kramer).

A 3-milligram tablet of histamin is dissolved in one cubic centimeter of water. A drop of this solution is applied to the skin and a single prick is made through this drop just deep enough to avoid drawing blood. After one and one-half minutes the drop of solution is gently removed by absorbing with filter paper. If several pricks are made to insure against the chance of failure, they should be through separate drops at least 3 centimeters distant from each other, in order that variations in the size of the wheal and flare may be appreciated. Some authorities recommend the intradermal injection of histamin as being more certain, but this technique makes it very difficult to examine the wheal.

The epinephrin punctures are similarly performed with 1/1000 adrenalin solution, and the cuff pressure necessary to cause the white reaction to disappear is noted.

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